did send money at least once. See Docs. 70 and 77; and Frank Hanaford
to TAE, 12 July 1871, DF (TAEM 12:224).
4. See Doc. 77.

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From Dewitt Roberts

Ellenburgh N.Y. Feb 4 1870

Dear Sir—

I have just directed Mr Williams\(^1\) to send the Voting Ins't\(^2\) here by Express with facilities for working it—

I wish you would prepare the neccessary articles for the solution\(^3\) and send it to me by the National Express Company as soon as possible. I would also like to know if you are willing I should proceed to put the Instrument before the public

Your early attention to this matter will greatly oblige  Truly Yours

D. C. Roberts

Am sorry the Boys had to give up as they did.\(^4\) I would rather have given $50. myself than had them do that

ALS, NJWOE, DF (TAEM 12:220).

1. Charles Williams, Jr.
2. Doc. 43.
3. The chemical solution for soaking the recording paper; see Doc. 43 headnote.

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Agreement with George Field and Elisha Andrews

This Article of agreement made and entered into this tenth (10th) day of February 1870 by and between Thomas A Edison of Elizabeth, New Jersey, party of the first part, and Geo B Field\(^1\) of the city county and State of New York and Elisha W Andrews\(^2\) of the town of Englewood Bergen County New Jersey parties of the second part.\(^3\) Witnesseth that the party of the first part agrees to invent and perfect a Printing Telegraph Instrument to be worked practically upon one wire, and to perform the same kind of work as the stock Instrument known as “Calahans Invention Patent” Asnow used by the “Gold and Stock Telegraph Company” of New York City.\(^4\)

Said instrument to be made, shall be constructed not to have more than thirty Six pieces and Six screws in its working parts, all parts to be made of iron and steel, the size to be smaller than the Calahan instrument and the speed to be as great if not greater.\(^5\)

[New York?] February 10, 1870

\(^1\) Thomas A. Edison
\(^2\) Elisha W. Andrews
\(^3\) Headnote
\(^4\) New York City
\(^5\) \(151\)
It shall be constructed to print two lines on the strip of paper, and all the parts to be clearly seen, and easily approached and the instrument to be easily taken out or put in an office, to have a superior inking apparatus, and the instrument to be worked with the same amount of battery as those used by the Gold & Stock Tel Co" if not less. All parts of the said instruments to be made interchangeable, and the said invention to be clearly patentable in its combinations, and upon the completion of two instruments fully demonstrating the perfection of the instruments for the purpose designed, to the satisfaction of the parties of the second part, the said part of the first part, agrees to prepare or have prepared an application for Letters Patent from the United states Government, and convey by an assignment at the Patent office of the United states to the parties of the second part— Nine tenths (9/10) of the interest of the party of first part in said invention upon the following conditions to wit:

The parties of the second part shall well and truly pay to the said party of the first part the sum of Seven (7000) thousand dollars in full payment for the said nine tenths (9/10) when the Patent for the instrument above described shall have been allowed by the Patent office. And the said party of the first part of the first part further agrees that he will lease to the said parties of the second part from the date of said Patent, the remaining one tenth interest in said invention for Seventeen years from the date of the patent for a sum not exceeding one dollar per annum. And the parties of the second part shall by a special agreement agree not to reissue said patent during its validity or Seventeen years without the consent of the party of the first part, and shall pay the bills for the construction of the two instruments above referred to not to exceed the sum of two hundred & fifty dollars.

This Contract is assignable, and the agreements are obligatory upon the heirs or assigns of the parties herewithunto.

In witness whereof the parties have hereunto set their hands & seals the day and year aforesaid

Thomas. A. Edison
Geo B. Field
Elisha W Andrews

In presence of A M Kidder

In addition to the above agreement I agree to include my services as C Electrician for one year from date of the application for Letters patent for the above named instrument, for the consideration named in the above writing. I also agree to assign the above named parties any future improvement in

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mechanical Printing Telegraph instruments which are applicable to directly to quoting the prices of Gold & Stocks or any [scheme?] of telegraphing where a number of instruments are worked in connection with one another in the United States which I may devise

Thomas A. Edison

DS (copy), NjWOE, LS (TAEM 28:931). In George Field's hand. 1 Date taken from text, form altered. 2 Representation of wax seal drawn next to each signature. 3 After this, text is in Edison's hand. 4 Canceled words interlined above.

1. George Baker Field (n.d.) succeeded Elisha Andrews (see n. 2) as president of the Gold and Stock Telegraph Co. on 13 July 1868. He became a director of the company on 7 September 1869 and was replaced as president by Marshall Lefferts in March 1870. Reid 1879, 607–8; Hotchkiss 1969, 437.

2. Elisha Whittelsey Andrews (n.d.), a New York stockbroker and original stockholder in Gold and Stock, served as president of Gold and Stock from 19 September 1867 to 13 July 1868, when he was elected to the company’s board of directors. In 1870 he traveled to England, seeking to introduce Gold and Stock instruments there (see Chapter 7 introduction). Two years later he helped found the American District Telegraph Co., which provided alarm and messenger services (see Doc. 226, n. 2). Incorporation agreement of Gold and Stock Telegraph Co., exhibit in G&S v. Pearce; Reid 1879, 607, 635; Hotchkiss 1969, 434; Calahan 1901c.

3. Although Gold and Stock is not mentioned in this document, Field and Andrews were acting in the company’s interest. They assigned this agreement to the company in late spring. G&S Minutes 1867–70, 126–30.

4. Edward Calahan’s printing telegraph (U.S. Pat. 76,993), which was introduced in brokers’ offices in New York at the end of 1867, was the first to have two independent typewheels—one for letters and one for numbers. It was the mainstay of the Gold and Stock inventory of printers until Edison’s universal stock printer superseded it in the early 1870s (G&S Minutes 1870–79, 86; William Orton to S. G. Lynch, 22 Oct. 1872, LBO). Pope and Edison, like many other inventors, sought unsuccessfully to find anticipations of Calahan’s design with two independent wheels so that they could circumvent his patent. All litigation concerning infringements of Calahan’s design was decided in favor of Gold and Stock. The principal advantage of two typewheels was the ready legibility of the printed tape, which was considered “extremely important” by Gold and Stock and its customers. Because each wheel had a blank space (or a dot), there was no need for an extra mechanism to block one while printing with the other (as Edison later provided for his cotton instrument and universal stock printer). In addition the lower inertia and smaller circumference of the two independent typewheels allowed greater speed than either a single, large typewheel—which was Edison’s solution in this case—or two coupled typewheels. See Doc. 116 for sketches of two other attempted solutions. Affidavit of Frank L. Pope, 5 Nov. 1883, G&S v. Pearce; George Scott’s testimony, 12 Feb. 1884, ibid.; G&S v. Wiley.

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The Edward Calahan stock printer used by the Gold and Stock Telegraph Co.: (left) side view; (right) front view.

The instrument Edison designed to satisfy his 10 February 1870 contract with George Field and Elisha Andrews.

5. The number of parts in Calahan's and Edison's printers is uncertain. The "iron and steel" qualification was probably economic. Brass had the advantages of being nonmagnetic and nonrusting but was at the time about six times as expensive as iron and 33 percent more expensive than steel. See invoices, 70-006, DF (TAEM 12:156-98).

6. The patent for the printer designed under this contract was executed on 24 May 1870 and issued as U.S. Pat. 128,608 (G&S Minutes 1867-70, 126-30). The entire right to the patent was assigned to Gold and Stock on 30 October 1872 (Digest Pat. E-2:209). This machine was never used. Edison made an amendment to the patent application that placed the application in interference with another machine, and the application was not allowed for a year. After finally amending the application to remove the interference, Edison neglected it for another year before paying for its issuance. U.S. Patent Office 1872, 80-81; Pat. App. 128,608. See also Doc. 124, n. 1.

7. This payment was fulfilled in different terms under the agreement of 26 May 1871 (Doc. 164).

8. Edison filed the patent application (see n. 6) on 27 May 1870. The next year on May 26 he signed an agreement making him the company's "Consulting Electrician and Mechanician" for five years (Doc. 164).